

## ABSTRACT

An object of the present invention is to provide a plasma etching method by which both of a requirement for a trench shape and a requirement for an aspect ratio can be satisfied, and a trench having a side wall of a smooth shape can be formed. According to the present invention, a silicon substrate is placed on a lower electrode (120), etching gas is supplied through a gas introducing port (140) and exhausted from an exhaust port (150), high frequency powers (130a, 130b) supply high-frequency electricity to an upper electrode (110) and a lower electrode (120), respectively, in order to energize the etching gas into plasma state, using an ICP method, and then activated species are generated to make etching of the silicon substrate be progressed. As the etching gas, mixed gas, which includes mainly  $\text{SF}_6$  gas added with  $\text{O}_2$  gas and He gas, is used.